Multipole electric motor and process for its production

swap

Patent claims

1. A multipole electric motor with a rotor and a stator, comprising a plurality of coils and stator laminations which are magnetically separated from one another and respectively extend from the coils to the rotor, characterized in that the stator laminations (1, 2, 3, 4) are connected in a region facing the rotor (19) to a holder (11) of non-magnetic metal.

2. The electric motor as claimed in claim 1, characterized in that the stator laminations (1, 2, 3, 4) are galvanized.

3. The electric motor as claimed in claim 2, characterized in that the stator laminations (1, 2, 3, 4) are welded to the holder (11) of non-magnetic metal.

4. The electric motor as claimed in claim 3, characterized in that the stator laminations (1, 2, 3, 4) are projection-welded to the holder (11) of non-magnetic metal.

5. The electric motor as claimed in one of the preceding claims, characterized in that the non-magnetic metal is brass.

6. The electric motor as claimed in one of claims 1 to 4, characterized in that the non-magnetic metal is a non-ferrous metal or a non-ferrous metal alloy.

7. The electric motor as claimed in one of the preceding claims, characterized in that the stator laminations (1, 2, 3, 4) form a stator which centrally has an opening (18) for receiving the rotor (19), the individual stator laminations (1, 2, 3, 4) being arranged around the opening (18).

8. The electric motor as claimed in claim 7, characterized in that pairs of opposite stator laminations (1, 2, 3, 4) are bent in relation to one another in such a way that they receive a coil (23, 24).

9. The electric motor as claimed in claim 8,

characterized in that it has four stator laminations (1, 2, 3, 4) and two coils (23, 24).

10. The electric motor as claimed in claim 9, characterized in that two opposite stator laminations (1, 2) are cranked once in relation to each other in such a way that parts of the stator laminations (1, 2) are aligned parallel to each other, between which parts the first coil (23) is arranged in a magnetically coupled manner.

11. The electric motor as claimed in claim 10, characterized in that the two other opposite stator laminations (3, 4) have in the vicinity of the opening (18) a first crank and in the vicinity of the free ends a second crank and the second coil (24) is arranged in a magnetically coupled manner between the free ends.

12. The electric motor as claimed in claim 11, characterized in that the coils (23, 24) are arranged axially parallel at one height.

13. The electric motor as claimed in one of the preceding claims, characterized in that the holder (11) has at least one foot (13) for mechanically fixing the stator at the place where the stator is fitted.

14. The electric motor as claimed in claim 13, characterized in that the foot (13) can be cranked after fitting of the stator for fixing the stator.

15. The electric motor as claimed in claim 13 or 14, characterized in that the stator can be fixed in a housing.

16. The electric motor as claimed in one of the preceding claims, characterized in that one stator lamination (1) has an opening (8) into which a positioning pin protrudes.

17. The electric motor as claimed in claim 16, characterized in that the positioning pin is arranged in the housing.

18. The electric motor as claimed in one of the preceding claims, characterized in that the stator laminations (1, 2, 3, 4) have at their ends facing the coils (23, 24) flattened portions (6) for facilitating

fitting of the coils (23, 24).

19. The electric motor as claimed in one of the preceding claims, characterized in that the rotor (19) is connected to a worm drive (22) which drives a spur gear (26).

20. A process for producing the electric motor as claimed in one of the preceding claims, characterized in that the stator laminations (1, 2, 3, 4), connected to one another by one or more webs (5), are produced as one workpiece (W), characterized in that the workpiece (W) is connected to the holder (11) of non-magnetic metal and the web or webs (5) between or on the stator laminations (1, 2, 3, 4) are cut through and/or removed completely.

21. The process as claimed in claim 20, characterized in that the connection of the stator laminations (1, 2, 3, 4) to the holder (11) takes place by soldering, adhesive bonding and riveting.

22. The process as claimed in claim 20 for producing an electric motor with the features of claim 3, characterized in that the connection takes place by welding.

23. The process as claimed in claim 22, characterized in that the welding is performed as projection welding, boss-shaped projections (12) being formed in the holder (11) and a required welding current being chosen such that atoms of the holder (11) migrate into the zinc layer of the pole laminations (1, 2, 3, 4) without altering the structure of the remaining metal of the pole laminations.

24. The process as claimed in one of claims 20 to 23, characterized in that the web or webs (5) between the stator surfaces are cut through by punching and/or removed completely.

25. The process as claimed in one of claims 20 to 24, characterized in that the workpiece (W) and the holder (11) are positioned with one another by a pin passed through the centering openings (10, 17).

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